

examined with the view of ascertaining whether such climates are desirable at all for consumptive patients. The results would have been rendered even more valuable if the author had availed himself more freely of the labours of others who have written on the same subject.

But it is the remarkable conclusion arrived at regarding the winter climates of the south of England which arrests attention. This conclusion is that Torquay, Bournemouth, Ventnor, and the whole of the western end of the English Channel possess climates less beneficial to consumptive patients than are the climates of Hastings, St. Leonards, and the eastern end of the Channel; and it is thence inferred "that it is the stronger influence of the Atlantic warm current and its accompanying winds on the shores of Devonshire and Cornwall, which though it raises their winter temperature many degrees, clothing their hillsides with verdure and causing what would otherwise be waste places to bloom with rare exotics, deprives them of the stimulating and bracing influence which is possessed by the less beautiful shores of Sussex with its breezy downs and colder winter climate."

It may be doubted if the facts warrant this very broad conclusion. It has been shown by Buchan and Mitchell in their discussion of the weather and mortality of London, published in *Four. Scot. Meteorol. Society*, vol. iv., p. 205, that the three periods of the year most fatal to consumptive patients are November and the first half of December, when the temperature is rapidly falling and is at the same time low; in January when the temperature falls to its annual minimum; but chiefly from March to about the middle of June, when the air is driest. Now these results, which are based on the enormous population of London and the long period of thirty years, would have led to the expectation that the winter and spring climate of Torquay was certainly not less beneficial to consumptive patients than that of St. Leonards.

It seems not improbable, from an examination of the whole facts, that the discrepancy may be accounted for by the comparatively small number of patients whose cases have been discussed by Dr. Williams, viz., 243, of whom 100 were under medical treatment at Torquay, 58 at Ventnor, 57 at Hastings, and 20 at Bournemouth, and to an important point missed in the discussion, viz., the very different types of weather which have prevailed in the different years and the varying mortality from consumption attending on these types of weather. It is indispensable in such a discussion that tabular statements be prepared, showing the number of patients under medical treatment for consumption at each place during each month of each year, and the results of the treatment as respects each patient, in order that the results may be compared with the meteorology of the place and year to which they refer. Till this be done we cannot be said to be in a position to make any comparative statement of the therapeutic effects on consumptive patients of the climates of the different sanatoriums of the south of England; it being evident, for instance, that the relatively high position of Hastings as a sanatorium for consumption may be wholly due to a chance excess of patients sent there during exceptionally mild seasons, and the relatively low position of Bournemouth to the mere accident of one

or two consumptive patients more than the average being there in a particular season when the weather happened to be peculiarly severe.

OUR BOOK SHELF

Annals of the Astronomical Observatory of Harvard College. Vol. xiii.

WE must congratulate the authorities of Harvard College on the publication of the *Annals of the Observatory*. The volume is the result of a large portion of the work of the institution during the time that it has been without a director, since the death of Prof. Winlock in June 1875. An account is given of the several funds available for purpose of publication, and then follow the biographical notes of W. C. Bond, G. P. Bond, and J. Winlock, the several directors since the foundation in 1815. We then come to the details of the instruments in use and plans of the observatory and grounds. The work done from the year 1855 appears to have been chiefly the measurement of binary stars, transit observations, investigation of lunar phenomena, drawings of nebula, photographs of the sun, and spectroscopic observations, the latter consisting largely of the examination and drawing of the chromosphere. In Part II. we find some thirty-four exquisitely-finished plates depicting the results of the foregoing observations, published at the expense of the Bache fund. These were made by or under the direction of the late Prof. Winlock. It seems a pity that the authorities do not publish from time to time a selection of these papers on special subjects. Part II. would be widely bought by astronomers if its contents were given separately, and the plates, which are, perhaps, the finest accessible, were practically not buried in an odd volume of a lengthy series of "annals."

Cultivated Plants; their Propagation and Improvement.

By F. W. Burbidge. (Edinburgh and London: William Blackwood and Sons.)

THAT Mr. Burbidge possesses the pen of a ready writer no one can deny when it is borne in mind that in a very short time he has produced several books on horticultural or gardening subjects. His "*Domestic Floriculture*," published by the same firm as the present volume, was, up to that period, the best of his productions; for though it was not of a scientific character, it was of a nature calculated to elevate window gardening from the mere habit of simply allowing a few ordinary plants to struggle for an existence through adverse circumstances to a system in which all might take an interest.

The present volume is one of a different character from any of those which have preceded it. Mr. Burbidge, in fact, says in his Preface that the primary intention of the book was as a popular handbook on plant propagation and improvement, with a hope also that it might "serve young gardeners as a stepping-stone to works of a higher scientific character, and more especially to those of Charles Darwin." Nevertheless, the chapters or sections devoted to "Hybridising and Cross-breeding," "Natural Fertilisation and Cross-breeding," and "Artificial Fertilisation and Cross-breeding," will be useful as bringing together from various and widely scattered sources, what has been done in these cognate branches of scientific research. In these sections we think Mr. Burbidge has done his work well, the references to the quotations being fully given not only to English but also to French and German works.

The great bulk of the volume is devoted to a "General review of some of the most popular groups of cultivated plants, with notes on their propagation and natural affinities." In this the arrangement of the orders is somewhat novel, for instead of being classified in a scientific manner they are placed alphabetically. The habits and pecu-

liarities of the principal plants in each order are briefly described as well as their economic uses, together with notes on the most general method of propagation.

The book will no doubt meet with a wide circulation; the chapters on propagation, grafting, and budding, being of a practical character, will be useful to other readers besides those of a purely scientific turn. As a further illustration of this we may point to the chapter on Seed-saving, in which we are reminded of the excellence of the produce of the Continental seed farms, especially those of Erfurt, which are noted for their Primulas, Stocks, Balsams, Asters, &c.; we are also told that the seed of such common plants as Cineraria and Calceolaria is, when of a "good strain," worth from 10*l.* to 15*l.* per ounce, and Primula seeds even more. The book has a good index, always a special point of value in one intended for reference.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

The "Hibernation" of Birds

I TRUST your correspondent "X" will not object to my pointing out that the "hibernation" story which he retails in NATURE (vol. xvi., p. 43) has in common with dozens, not to say scores, of others, the defect of being delivered at second-hand, without even the slightly confirmatory evidence which the name of the observer of the marvel and of the place where it occurred would supply. As such it may surely be dismissed to the limbo of (I will say) legends. That which has been furnished by the Duke of Argyll (vol. xv., p. 528) rests on a better base, and is almost the first I have met with for which a respectable man vouches. Far be it from me to deny the possibility of a miracle being wrought in Persia, but I confess that without impugning Sir John McNeill's veracity, I simply refuse to believe the story except I regard as miraculous the incident he relates. Now there is a common supposition that miracles are only performed with some worthy end in view, and, moreover, that unless a miracle is recognised as such by the witnesses thereto its effect is nullified. This supposition may, however, be wrong, for it is hard to conceive what may have been the end of this miracle, and its supernatural quality is clearly not acknowledged by the distinguished persons present. One would find greater satisfaction, perhaps, if the Duke of Argyll had expressed his belief in it, but he contents himself with saying that he had "frequently heard" his brother-in-law relate the circumstance. The identity of this phrase with that said to have been used by another great man on another occasion is very striking, and since the story, though old, is short, perhaps you will let me tell it. I have heard that King George IV., some years before his death, was strongly possessed with the notion that he had been present at the battle of Waterloo. Once as he was recounting his personal adventures on that eventful day, he perceived some uncourtly sign of incredulity shown by one of his audience. Turning to the late Duke of Wellington, who was of the company, he appealed to him—"Isn't that true, Arthur?" The adroit reply was—"I have frequently heard your Majesty say so."

May 19

THE REVIEWER OF PALMÉN'S WORK

Barlow's and Laslett's Determination of the Elasticity and Strength of Timber

ON comparing the results of Mr. Barlow's determination of the modulus of elasticity of Teak timber, given in his "Strength of Materials," p. 82, sixth edition, with the results of different Dutch investigators on Djati timber of Java, I was struck by the great difference between those results, those of Mr. Barlow being very much higher than the others, though Teak of British India and Javanese Djati are merely different names for the same species, *Tectona grandis*, L., of the family Verbenaceæ. My own experiments, which will, I hope, be afterwards published

in my inaugural dissertation, show also the complete identity between Teak and Djati. This led me to detect a serious error in Mr. Barlow's calculations. He measures the deflection produced by a certain weight of a batten 7 feet by 2 inches square, supported at both ends on two props, the bearing distance being 6 feet, as is stated on p. 67 in the general description of his arrangements. The value of E is found in this case by the formula—

$$E = \frac{l^3 w}{16 ad^3 \delta}$$

in which l is the bearing distance; in the case of Mr. Barlow, equal to 6 feet. Now all Mr. Barlow's E 's are calculated by introducing $l = 7$ feet instead of $l = 6$ feet, as should be; the consequence is that all those values are too great. So for Teak timber the value of E is found to be = 603,600 lbs., while the true value is $E = 380,023$ lbs. on the square inch. Also in the formula for the strength—

$$S = \frac{l w}{4 ad^2}$$

l is the bearing distance, Mr. Barlow calculates $S = 2,462$, taking $l = 7$ feet, the real value being $S = 2,110.5$ for $l = 6$ feet.

Mr. Thomas Laslett, in his "Timber and Timber-trees" (London: Macmillan and Co., 1875), following the arrangements of Mr. Barlow, commits the same error. On p. 42 he tells us that in all his experiments pieces were taken $2'' \times 2'' \times 84'' = 336$ cubic inches, and that each piece was placed upon supports exactly 6 feet apart. But for l is taken, instead of the bearing distance 6 feet, the whole length 7 feet. So all the numbers for the moduli of elasticity of the different woods calculated by Mr. Laslett are too great in the proportion $7^3 : 6^3$, and the numbers for the strength in the proportion $7 : 6$.

The reduced values for E from Mr. Laslett, namely, $E = 362,870$ and $E = 305,876$, and that from Mr. Barlow, $E = 380,023$, agree tolerably well with the mean results of Dutch investigators, $E = 404,210$, and much better than does the uncorrected value, $E = 555,180$. Other determinations of the E of Teak timber are not known to me.

The results of Mr. Barlow were already published in the year 1817. Since that time several editions of this valuable work have appeared; in the year 1867 the sixth edition, revised by his two sons. General Morin gives in his "Résistance des Matériaux" all the results of Mr. Barlow on timber, reduced to metric weights and measures. Also MM. Chevandier and Wertheim, in their "Mémoire sur les Propriétés Mécaniques du Bois." It is scarcely to be believed that none of these eminent men, nor any one else, have remarked this error in the calculation of Mr. Barlow's often used numbers.

S. FIGEE

Haarlem, Holland

Basking Shark

I THINK it but just to Prof. Bocage to ask you to publish the inclosed letter, which only reached me on the first of this month, owing to its having been sent to a wrong address. I regret that I overlooked Signor Capello's memoir on *Selache maxima*, which was so plainly indicated in the *Zoological Record* for 1869. I had, indeed, the "Catalogo dos peixes de Portugal que existem no Museu de Lisboa, por F. de Brito Capello," which was published in No. vi. of the *Lisbon Journal of Science*; but No. vii., which the author (whose kindnesses to me when at Lisbon, in 1868, I cannot forget) sent to me, I never got, and hence one cause of my oversight.

E. PERCEVAL WRIGHT

Trinity College, Dublin

Lisbonne, le 14 février, 1877

MONSIEUR ET HONORÉ CONFRÈRE,—Dans l'article que vous avez publié dans la NATURE sur le "Basking Shark," vous avez, comme le Professeur Paul Gervais et d'autres, attribué à M. Steenstrup la découverte des appareils tamisants ou fanons branchiaux du squalo pèlerin ou *Squalus maximus*. Si vous vous donnez la peine de consulter No. vii. du *Journal des Sciences Math., Phys. et Nat. de Lisbonne*, vous y trouverez, à p. 236, la description de cet appareil; vous trouverez également ces appareils figurés sur la planche qui accompagne cet article et qui contient aussi la figure du poisson. La description et la figure des appareils branchiaux ou des fanons branchiaux du *Sq. maximus* (et des espèces congénères) ont été donc publiés par M. Capello, aide-naturaliste au Muséum de Lisbonne, en août de 1869; c'est-à-dire 4 ans avant la publication de l'article